



Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-278



CH-47F Improved Cargo Helicopter (CH-47F)

As of FY 2016 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
\$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
\$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
\$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President's Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

Program Information

Program Name

CH-47F Improved Cargo Helicopter (CH-47F)

DoD Component

Army

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Date

Assigned: August 3, 2012

References

SAR Baseline (Production Estimate)

Army Acquisition Executive (AAE) Approved Acquisition Program Baseline (APB) dated November 22, 2004

Approved APB

Army Acquisition Executive (AAE) Approved Acquisition Program Baseline (APB) dated April 22, 2010

Mission and Description

The CH-47F Improved Cargo Helicopter (CH-47F) supports the Army's requirement to be strategically responsive across the full spectrum of operations. It will provide continued support, coverage, and sustainment of Maneuver, Fire Support, Air Defense, and Survivability mission areas. Its mission is transportation of ground forces, Class III/Class V supplies, and other battle critical cargo in support of all future contingencies. The CH-47F enables the Army to support the rapid response capability necessary for forcible and early entry contingency missions, as well as tactical and operational nonlinear, noncontiguous, simultaneous, or sequential operations, which will be characteristic of future operations.

The CH-47F is a future force system that supports the Army Vision. The CH-47F is a twin-turbine, tandem-rotor, heavy-lift transport helicopter with a useful load of up to 25,000-pounds. The CH-47F's lift capability is invaluable as the Army transforms from a heavy-division dominated force to a more deployable medium weight force focused toward 21st Century Army requirements. The CH-47F, with its upgraded engines, the Common Avionics Architecture System (CAAS) with advanced avionics, monolithic machined frame components and airframe modifications, will reduce operating costs and continue to be a National asset providing peacetime disaster relief and wartime service to this country for another 20 years.

The CH-47F program fills the Army's Aviation Transformation Chinook requirement for upgraded aircraft and is comprised of both remanufactured and new aircraft. The total remanufactured aircraft will consist of CH-47Fs and MH-47Gs. The MH-47G configuration replaces the current MH-47E/Ds for Special Operations Forces. The CH-47F program installs a new digital cockpit, incorporates all new airframe components, and modifies the aircraft to reduce vibration. The CAAS digital cockpit will provide future growth potential. It includes a digital data bus that permits installation of enhanced communications and navigation equipment for improved situational awareness, mission performance, and survivability. New airframe structural components and modifications will reduce harmful vibrations, improving O&S efficiency and crew endurance. Other airframe modifications reduce the time required for aircraft tear down and build-up during C-5/C-17 deployment by 60 percent. These modifications significantly enhance the CH-47F's strategic deployment capability.

Executive Summary

The CH-47F program is in full rate production and remains on schedule with 374 CH-47F aircraft on contract (228 New Build and 146 ReNew). The first lot of the Multiyear II contract (Lot 11) was awarded on June 10, 2013, and the second lot of the Multiyear II contract (Lot 12) was awarded on December 26, 2013. The first Multiyear II delivery occurred ahead of schedule on January 29, 2015. A total of 369 aircraft have been delivered as of February 3, 2015 (2 RDT&E aircraft, 308 CH47Fs and 59 MH-47Gs). The FY 2013 Overseas Contingency Operations (OCO) funds of \$231.3M were received in June 2013 for six CH-47F aircraft. The FY 2014 OCO funds of \$386.0M were received in March 2014 for ten CH-47F aircraft. On December 23, 2014, a Configuration Steering Board ADM increased the CH-47F Army Acquisition Objective from 533 to 542. In January 2015, \$347.4M in FY 2014 OCO funds for nine aircraft was rescinded.

The CH-47F Product Manager's Office (PMO) is tasked by the Department of Army to continue CH-47F training of Active Component (AC), National Guard (NG), and Reserve Component (RC) Combat Aviation Brigades (CABs) via New Equipment Training (NET) through FY 2017. The CH-47F NET teams have completed fielding and training of all 13 AC CABs, Honduras, one RC CAB, eight NG CABs and the Eastern Area Aviation Training Site. The PMO supports multiple contractor NET teams who provide concurrent training at separate locations.

The NET for 2nd Infantry Division (ID) CAB (18th Unit Equipped (UE)), Camp Humphreys, Korea was completed on April 28, 2014. The NET for 4ID CAB (19th UE), Fort Carson, Colorado was completed on April 25, 2014. The NET for the 1-228 Aviation Regiment (20th UE), Honduras was completed on April 28, 2014 at Hunter Army Airfield (AAF) in Savannah, Georgia. The NET for U.S. Army Reserve (21st UE) began on August 25, 2014. Training of the first of three CABs was completed on December 18, 2014, with training of the 2nd CAB on-track for completion on April 27, 2015 and training for the 3rd CAB planned to be complete August 31, 2015. The NET was completed for the California National Guard at Hunter AAF in Savannah, Georgia on December 19, 2014.

Software version 9.2 installation/NET is ongoing at multiple locations for both the Active and Reserve Components. The 9.2 NET for both the 25th ID CAB and the Hawaii NG was completed in October 2014. The 9.2 NET training for the Nebraska/Colorado and Iowa/Minnesota NG began in February 2015 at Camp Ripley, Minnesota.

One CH-47F unit is currently deployed to Operation Enduring Freedom.

The CH-47F PMO is installing Infrared Suppression System, Advanced Threat Infrared Counter Measures, and other Army-directed modifications at the Millville, New Jersey modification center.

There are no significant software-related issues with this program at this time.

Threshold Breaches

APB Breaches

Schedule		<input type="checkbox"/>
Performance		<input type="checkbox"/>
Cost	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
O&S Cost		<input type="checkbox"/>
Unit Cost	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

Nunn-McCurdy Breaches

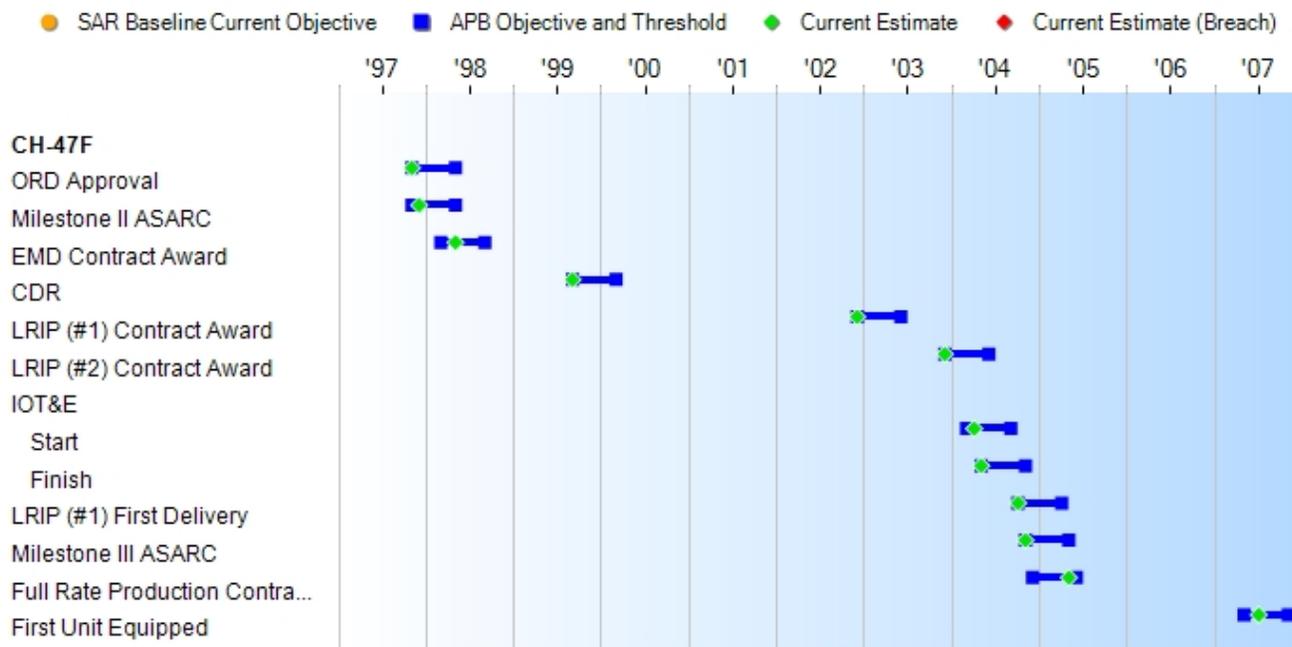
Current UCR Baseline

PAUC	None
APUC	None

Original UCR Baseline

PAUC	None
APUC	None

Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold	Current Estimate	
ORD Approval	Nov 1997	Nov 1997	May 1998	Nov 1997
Milestone II ASARC	Nov 1997	Nov 1997	May 1998	Dec 1997
EMD Contract Award	Mar 1998	Mar 1998	Sep 1998	May 1998
CDR	Sep 1999	Sep 1999	Mar 2000	Sep 1999
LRIP (#1) Contract Award	Dec 2002	Dec 2002	Jun 2003	Dec 2002
LRIP (#2) Contract Award	Dec 2003	Dec 2003	Jun 2004	Dec 2003
IOT&E				
Start	Mar 2004	Mar 2004	Sep 2004	Apr 2004
Finish	May 2004	May 2004	Nov 2004	May 2004
LRIP (#1) First Delivery	Oct 2004	Oct 2004	Apr 2005	Oct 2004
Milestone III ASARC	Nov 2004	Nov 2004	May 2005	Nov 2004
Full Rate Production Contract Award	Dec 2004	Dec 2004	Jun 2005	May 2005
First Unit Equipped	May 2007	May 2007	Nov 2007	Jul 2007

Change Explanations

None

Notes

The IOT&E is a single effort divided into two phases. Phase I, completed in May 2004, supported FRP. Phase II, completed in June 2007, supported First Unit Equipped.

Acronyms and Abbreviations

ASARC - Army Systems Acquisition Review Council

CDR - Critical Design Review

IOT&E - Initial Operational Test and Evaluation

Performance

Performance Characteristics				
SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
Self-deploy w/30 min fuel reserve (nm)				
1260	1260	1056	1130	1130
Transport 16,000 lbs of internal/external cargo (nm)				
100	100	50	56	56
Transport combat equipped troops:				
Number of Troops				
44	44	31	31	31
Range (nm)				
150	150	100	150	150
Reliability:				
MTBEMA (flt hrs)				
3.5	3.5	3.3	4.0	3.3
Maintenance:				
Total Maintenance Ratio (mmh/flt hr)				
9.2	9.2	9.8	4.8	9.8

Requirements Reference

Operational Requirements Document (ORD) Revision 4 dated January 26, 2006

Change Explanations

None

Notes

CH-47F Operational Test was completed on June 4, 2007; RAM data final scoring conference completed on June 5, 2007.

Per new guidance from DoD Acquisition Visibility, O&S/Sustainment Reporting FDD Version 3.0, the definitions of Demonstrated Performance and Current Estimate are:

Demonstrated Performance: The Demonstrated Performance section of Reliability and Maintenance is actual data derived from the current AMRDEC CH-47F RAM Report.

Current Estimate: The current estimate represents anticipated performance once all units are fielded. The current estimates for Reliability and Maintenance correspond to the CH-47F ORD values.

Acronyms and Abbreviations

AMRDEC - Aviation and Missile Research Development and Engineering Center

FDD - Functional Design Document

flt - flight

hr(s) - hour(s)

lbs - pounds

min - minutes

mmh - maintenance man hour

MTBEMA - Mean Time Between Essential Maintenance Actions

nm - nautical miles

RAM - Reliability, Availability, Maintainability

w/ - with

Track to Budget

General Notes

Line Item AA0252 is shared with CH-47D Modifications applied to currently fielded CH-47D aircraft. The CH-47F's funding lines changed starting in FY 2010 to CH-47 Helicopter (A05101) - a parent (rollup) of New Build and Service Life Extension Program (SLEP), CH-47 SLEP (A05105), and CH-47 New Build (A05008). CH-47F funding for FY 2009 and prior resides on the previously combined AA0252 line.

RDT&E

Appn	BA	PE	
Army	2040	07	0203744A
	Project	Name	
	D430	Aircraft Modifications/Product Improvement Program/Improved Cargo Helicopter (Shared) (Sunk)	

Procurement

Appn	BA	PE	
Army	2031	01	0210104A
	Line Item	Name	
	A05008	CH-47 NEW BUILD (Shared)	
Army	2031	01	
	Line Item	Name	
	A05105	CH-47 SLEP (Shared)	
Army	2031	02	
	Line Item	Name	
	AA0252	CH-47 CARGO HELICOPTER MODS (Shared) (Sunk)	

Notes

A05008 and A05105 fund other aircraft modification efforts.

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2005 \$M			BY 2005 \$M	TY \$M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	179.7	183.3	201.6	183.3	171.0	171.6	171.6
Procurement	10435.1	11869.0	13055.9	12931.1	11976.4	13464.6	14868.3
Flyaway	--	--	--	12167.0	--	--	13994.0
Recurring	--	--	--	11827.8	--	--	13661.6
Non Recurring	--	--	--	339.2	--	--	332.4
Support	--	--	--	764.1	--	--	874.3
Other Support	--	--	--	701.8	--	--	800.7
Initial Spares	--	--	--	62.3	--	--	73.6
MILCON	0.0	0.0	--	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	10614.8	12052.3	N/A	13114.4	12147.4	13636.2	15039.9

Confidence Level

Confidence Level of cost estimate for current APB: 50%

The Confidence Level of the CH-47F APB cost estimate, which was approved on April 22, 2010, is 50% in accordance with Army Service Cost Position (SCP) policy.

Cost Notes

This submission includes the rescission of \$347.4M in FY 2014 Other Contingency Operations funds. It also includes the addition of FY 2018 funds for the Army Acquisition Objective increase of nine aircraft, from 533 to 542.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E		2	2
Procurement		510	548
Total		512	550

Quantity Notes

This submission includes the rescission of nine Other Contingency Operations funded aircraft in FY 2014. It also includes the Army Acquisition Objective increase of nine aircraft, from 533 to 542 in FY 2018.

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2016 President's Budget / December 2014 SAR (TY\$ M)									
Appropriation	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
RDT&E	171.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	171.6
Procurement	11731.7	960.0	1123.1	710.7	342.8	0.0	0.0	0.0	14868.3
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2016 Total	11903.3	960.0	1123.1	710.7	342.8	0.0	0.0	0.0	15039.9
PB 2015 Total	12231.8	960.0	1115.8	710.7	0.0	0.0	0.0	0.0	15018.3
Delta	-328.5	0.0	7.3	0.0	342.8	0.0	0.0	0.0	21.6

Funding Notes

This submission includes the rescission of \$347.4M in FY 2014 Other Contingency Operations funds. It also includes the addition of funding in FY 2018 for the Army Acquisition Objective increase of nine aircraft, from 533 to 542.

Quantity Summary										
FY 2016 President's Budget / December 2014 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
Development	2	0	0	0	0	0	0	0	0	2
Production	0	441	32	39	27	9	0	0	0	548
PB 2016 Total	2	441	32	39	27	9	0	0	0	550
PB 2015 Total	2	450	32	39	27	0	0	0	0	550
Delta	0	-9	0	0	0	9	0	0	0	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding							
2040 RDT&E Research, Development, Test, and Evaluation, Army							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1995	--	--	--	--	--	--	2.7
1996	--	--	--	--	--	--	4.3
1997	--	--	--	--	--	--	16.6
1998	--	--	--	--	--	--	22.6
1999	--	--	--	--	--	--	23.8
2000	--	--	--	--	--	--	27.1
2001	--	--	--	--	--	--	37.7
2002	--	--	--	--	--	--	17.7
2003	--	--	--	--	--	--	3.3
2004	--	--	--	--	--	--	7.3
2005	--	--	--	--	--	--	--
2006	--	--	--	--	--	--	7.0
2007	--	--	--	--	--	--	1.5
Subtotal	2	--	--	--	--	--	171.6

Annual Funding 2040 RDT&E Research, Development, Test, and Evaluation, Army							
Fiscal Year	Quantity	BY 2005 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1995	--	--	--	--	--	--	3.1
1996	--	--	--	--	--	--	4.8
1997	--	--	--	--	--	--	18.4
1998	--	--	--	--	--	--	24.9
1999	--	--	--	--	--	--	25.9
2000	--	--	--	--	--	--	29.1
2001	--	--	--	--	--	--	39.9
2002	--	--	--	--	--	--	18.5
2003	--	--	--	--	--	--	3.4
2004	--	--	--	--	--	--	7.3
2005	--	--	--	--	--	--	--
2006	--	--	--	--	--	--	6.6
2007	--	--	--	--	--	--	1.4
Subtotal	2	--	--	--	--	--	183.3

Annual Funding 2031 Procurement Aircraft Procurement, Army								
Fiscal Year	Quantity	TY \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2001	--	--	--	41.6	41.6	17.7	59.3	
2002	--	--	--	45.5	45.5	14.9	60.4	
2003	14	353.8	--	224.8	578.6	18.6	597.2	
2004	16	227.8	--	--	227.8	23.2	251.0	
2005	30	700.3	--	4.6	704.9	15.0	719.9	
2006	24	461.4	--	2.6	464.0	40.6	504.6	
2007	43	1121.7	--	13.3	1135.0	88.3	1223.3	
2008	53	1253.8	--	--	1253.8	60.4	1314.2	
2009	52	1216.3	--	--	1216.3	57.3	1273.6	
2010	39	852.2	--	--	852.2	76.1	928.3	
2011	49	1198.9	--	--	1198.9	113.7	1312.6	
2012	48	1352.5	--	--	1352.5	20.0	1372.5	
2013	44	1104.0	--	--	1104.0	98.9	1202.9	
2014	29	824.2	--	--	824.2	87.7	911.9	
2015	32	896.7	--	--	896.7	63.3	960.0	
2016	39	1086.1	--	--	1086.1	37.0	1123.1	
2017	27	670.9	--	--	670.9	39.8	710.7	
2018	9	341.0	--	--	341.0	1.8	342.8	
Subtotal	548	13661.6	--	332.4	13994.0	874.3	14868.3	

Annual Funding 2031 Procurement Aircraft Procurement, Army								
Fiscal Year	Quantity	BY 2005 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2001	--	--	--	43.9	43.9	18.7	62.6	
2002	--	--	--	47.4	47.4	15.5	62.9	
2003	14	360.5	--	228.9	589.4	19.0	608.4	
2004	16	225.8	--	--	225.8	22.9	248.7	
2005	30	675.4	--	4.4	679.8	14.5	694.3	
2006	24	433.2	--	2.4	435.6	38.2	473.8	
2007	43	1032.4	--	12.2	1044.6	81.4	1126.0	
2008	53	1136.0	--	--	1136.0	54.7	1190.7	
2009	52	1086.4	--	--	1086.4	51.2	1137.6	
2010	39	748.1	--	--	748.1	66.9	815.0	
2011	49	1033.6	--	--	1033.6	98.0	1131.6	
2012	48	1145.9	--	--	1145.9	17.0	1162.9	
2013	44	917.2	--	--	917.2	82.1	999.3	
2014	29	672.9	--	--	672.9	71.6	744.5	
2015	32	719.6	--	--	719.6	50.8	770.4	
2016	39	860.0	--	--	860.0	29.3	889.3	
2017	27	521.1	--	--	521.1	30.9	552.0	
2018	9	259.7	--	--	259.7	1.4	261.1	
Subtotal	548	11827.8	--	339.2	12167.0	764.1	12931.1	

This submission includes the rescission of \$347.4M in FY 2014 Other Contingency Operations funds for nine aircraft. It also includes the Army Acquisition Objective increase of nine aircraft, from 533 to 542. The funding for these nine aircraft is included in FY 2018.

Cost Quantity Information		
2031 Procurement Aircraft Procurement, Army		
Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned With Quantity) BY 2005 \$M
2001	--	--
2002	--	--
2003	14	348.3
2004	16	224.9
2005	30	672.1
2006	24	415.6
2007	43	1037.8
2008	53	1133.7
2009	52	1076.6
2010	39	746.6
2011	49	1016.9
2012	48	1091.4
2013	44	946.4
2014	29	650.0
2015	32	710.3
2016	39	878.2
2017	27	619.3
2018	9	259.7
Subtotal	548	11827.8

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	5/19/1998	8/19/2002
Approved Quantity	30	30
Reference	Milestone II ADM	LRIP ADM
Start Year	2003	2003
End Year	2004	2004

Milestone II and LRIP ADMs specified LRIP quantity as "up to 30 aircraft."

The FY 2003 PB funded 23 LRIP aircraft (seven in FY 2003 and 16 in FY 2004). Of these, one aircraft in FY 2003 was a CH-47F and the remaining 22 were MH-47G.

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost \$M	Description
United Arab Emirates	6/28/2011	16	598.7	
Turkey	7/9/2010	6	252.0	
Australia	3/19/2010	7	249.0	

Notes

The sale dates above are Letter Of Acceptance signature dates. The costs above are for the aircraft only.

The CH-47F aircraft capabilities and operational successes in Operation Iraqi Freedom and Operation Enduring Freedom are generating interest and inquiries from foreign CH-47D customers. The Common Avionics Architecture System (CAAS) cockpit provides pilot workload reductions and enhanced flight capabilities through flight control coupling. Foreign customers requesting configuration modifications to the aircraft which change the CAAS software, aircraft handling qualities, mission equipment or performance will incur non-recurring and recurring costs to develop, test, qualify, certify, field, and maintain the software and related hardware as well as increase the lead time to deliver the modified CH-47F. The FMS will help ensure a robust supply chain and industrial base.

Nuclear Costs

None

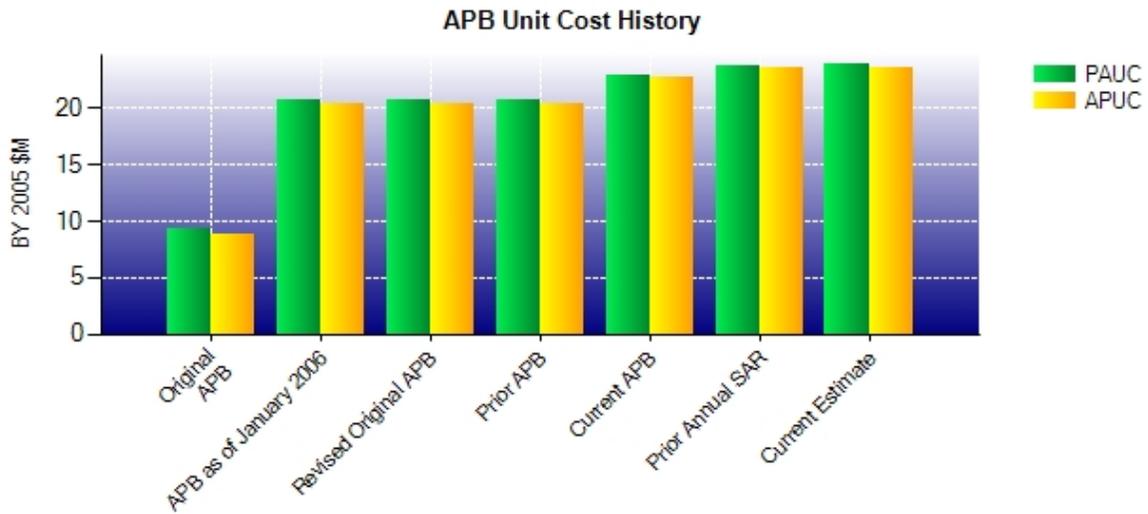
Unit Cost

Unit Cost Report

Item	BY 2005 \$M	BY 2005 \$M	% Change
	Current UCR Baseline (Apr 2010 APB)	Current Estimate (Dec 2014 SAR)	
Program Acquisition Unit Cost			
Cost	12052.3	13114.4	
Quantity	525	550	
Item	22.957	23.844	+3.86
Average Procurement Unit Cost			
Cost	11869.0	12931.1	
Quantity	523	548	
Unit Cost	22.694	23.597	+3.98

Item	BY 2005 \$M	BY 2005 \$M	% Change
	Revised Original UCR Baseline (Nov 2004 APB)	Current Estimate (Dec 2014 SAR)	
Program Acquisition Unit Cost			
Cost	10614.8	13114.4	
Quantity	512	550	
Unit Cost	20.732	23.844	+15.01
Average Procurement Unit Cost			
Cost	10435.1	12931.1	
Quantity	510	548	
Unit Cost	20.461	23.597	+15.33

Unit Cost History



Item	Date	BY 2005 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	May 1998	9.283	8.840	10.316	9.909
APB as of January 2006	Nov 2004	20.732	20.461	23.725	23.483
Revised Original APB	Nov 2004	20.732	20.461	23.725	23.483
Prior APB	Nov 2004	20.732	20.461	23.725	23.483
Current APB	Apr 2010	22.957	22.694	25.974	25.745
Prior Annual SAR	Dec 2013	23.786	23.538	27.306	27.093
Current Estimate	Dec 2014	23.844	23.597	27.345	27.132

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial PAUC Development Estimate	Changes								PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
10.316	-0.491	3.003	-0.164	2.273	7.378	0.000	1.410	13.409	23.725

Current SAR Baseline to Current Estimate (TY \$M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
23.725	-0.114	0.270	-0.690	0.421	3.379	0.000	0.354	3.620	27.345

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
9.909	-0.487	3.180	-0.171	2.282	7.354	0.000	1.416	13.574	23.483

Current SAR Baseline to Current Estimate (TY \$M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
23.483	-0.112	0.288	-0.693	0.422	3.389	0.000	0.355	3.649	27.132

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	Nov 1997	Nov 1997	Dec 1997
Milestone III	N/A	Jan 2004	Nov 2004	Nov 2004
FUE	N/A	Sep 2004	May 2007	Jul 2007
Total Cost (TY \$M)	N/A	3115.4	12147.4	15039.9
Total Quantity	N/A	302	512	550
PAUC	N/A	10.316	23.725	27.345

Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	171.0	11976.4	--	12147.4
Previous Changes				
Economic	-0.9	-19.7	--	-20.6
Quantity	--	+1050.2	--	+1050.2
Schedule	--	-397.0	--	-397.0
Engineering	+0.5	+231.1	--	+231.6
Estimating	+1.0	+1806.0	--	+1807.0
Other	--	--	--	--
Support	--	+199.7	--	+199.7
Subtotal	+0.6	+2870.3	--	+2870.9
Current Changes				
Economic	--	-41.9	--	-41.9
Quantity	--	--	--	--
Schedule	--	+17.3	--	+17.3
Engineering	--	--	--	--
Estimating	--	+51.3	--	+51.3
Other	--	--	--	--
Support	--	-5.1	--	-5.1
Subtotal	--	+21.6	--	+21.6
Total Changes	+0.6	+2891.9	--	+2892.5
CE - Cost Variance	171.6	14868.3	--	15039.9
CE - Cost & Funding	171.6	14868.3	--	15039.9

Summary BY 2005 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	179.7	10435.1	--	10614.8
Previous Changes				
Economic	--	--	--	--
Quantity	--	+844.2	--	+844.2
Schedule	--	-58.5	--	-58.5
Engineering	+0.5	+187.3	--	+187.8
Estimating	+3.1	+1316.8	--	+1319.9
Other	--	--	--	--
Support	--	+174.1	--	+174.1
Subtotal	+3.6	+2463.9	--	+2467.5
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	+36.3	--	+36.3
Other	--	--	--	--
Support	--	-4.2	--	-4.2
Subtotal	--	+32.1	--	+32.1
Total Changes	+3.6	+2496.0	--	+2499.6
CE - Cost Variance	183.3	12931.1	--	13114.4
CE - Cost & Funding	183.3	12931.1	--	13114.4

Previous Estimate: December 2013

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-41.9
Stretch-out of procurement buy profile from FY 2017 to FY 2018 due to the Army Acquisition	0.0	+17.3
Objective increase of nine aircraft. (Schedule)		
Adjustment for current and prior escalation. (Estimating)	+13.1	+15.9
Revised estimate to reflect the change in contract pricing from Multiyear II options to a single year stand-alone contract for nine aircraft impacted by the schedule stretch-out. (Estimating)	+23.2	+35.4
Adjustment for current and prior escalation. (Support)	+1.1	+1.5
Decrease in Other Support to reflect prior year actuals. (Support)	-5.4	-6.7
Increase in Initial Spares due to stretch-out of procurement buy profile. (Support)	+0.1	+0.1
Procurement Subtotal	+32.1	+21.6

Contracts

Contract Identification

Appropriation: Procurement
Contract Name: Multiyear II
Contractor: Boeing Helicopter
Contractor Location: Philadelphia, PA 19142
Contract Number: W58RGZ-13-C-0002
Contract Type: Firm Fixed Price (FFP)
Award Date: June 10, 2013
Definitization Date: June 10, 2013

Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
916.5	N/A	37	1969.3	N/A	65	1969.3	1969.3

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the increase in number of aircraft on contract and the application of Engineering Change Proposals (ECPs).

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

General Contract Variance Explanation

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	2	2	2	100.00%
Production	363	367	548	66.97%
Total Program Quantity Delivered	365	369	550	67.09%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	15039.9	Years Appropriated	21
Expended to Date	9966.9	Percent Years Appropriated	87.50%
Percent Expended	66.27%	Appropriated to Date	12863.3
Total Funding Years	24	Percent Appropriated	85.53%

The above data is current as of February 02, 2015.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	February 02, 2015
Source of Estimate:	POE
Quantity to Sustain:	449
Unit of Measure:	Aircraft
Service Life per Unit:	20.00 Years
Fiscal Years in Service:	FY 2007 - FY 2040

The O&S costs are taken from the the February 2015 POE which is based on methodology from the 2004 CH-47F Army Cost Position. It assumes an end state of 449 CH-47F operational aircraft when fully fielded flying 180 peacetime hours per aircraft per year, an increase of nine due to the change in the Army Acquisition Objective. While the common production costs of 66 MH-47Gs are included in the procurement costs, they are excluded from the O&S costs as they are managed by the Special Operations Aviation Regiment. The remaining 35 CH-47F aircraft are RDT&E aircraft and peacetime attrition aircraft that incur no O&S costs due to no flying hours; or are wartime replacement aircraft whose flying hours are already accounted.

The CH-47D and CH-47F costs are based on CH-47D actuals extracted from the Operating and Support Management Information System (OSMIS). To calculate the CH-47F costs, the CH-47D actuals were augmented by an improvement factor to account for the increased reliability of recapitalized parts, new airframe, and vibration engineering.

Sustainment Strategy

The sustainment approach for the CH-47F is a blend of Government and Contractor Logistics Support in conjunction with the Supportability Strategy. There is a continued focus on reducing maintenance burden and O&S costs including the use of Performance Based Logistics when appropriate.

Antecedent Information

The antecedent to the CH-47F is the CH-47D, for which the O&S costs are from the CH-47D model POE. The total O&S cost is based on 306 systems with an operating span of 20-years peacetime operating tempo spanning FY 1997 to FY 2018. The O&S costs are based on actuals extracted from OSMIS.

Cost Element	Annual O&S Costs BY2005 \$K	
	CH-47F Average Annual Cost Per Aircraft	CH-47D (Antecedent) Average Annual Per Aircraft
Unit-Level Manpower	401.300	658.828
Unit Operations	69.700	76.408
Maintenance	1165.500	1208.797
Sustaining Support	19.700	470.291
Continuing System Improvements	210.800	11.359
Indirect Support	99.500	652.265
Other	0.000	0.000
Total	1966.500	3077.948

Both the CH-47F and CH-47D estimates use the latest DoD inflation indices in Automated Cost Estimating Integrated Tools.

Item	Total O&S Cost \$M			
	CH-47F			CH-47D (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	16379.4	18017.3	17659.2	18837.0
Then Year	22285.6	N/A	23498.2	N/A

Disposal Cost is included in the Operating and Support Cost of the current APB objective and threshold for this program.

Equation to Translate Annual Cost to Total Cost

Total cost = Average annual cost per aircraft x quantity x service life = \$1966.5K x 449 x 20 = \$17659.2M.

O&S Cost Variance		
Category	BY 2005 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2013 SAR	17075.6	
Programmatic/Planning Factors	583.6	Increase due to nine additional operational aircraft and two added years to the total O&S timespan due to production stretch-out.
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	583.6	
Current Estimate	17659.2	

Disposal Estimate Details

Date of Estimate: February 02, 2015
Source of Estimate: POE
Disposal/Demilitarization Total Cost (BY 2005 \$M): Total costs for disposal of all Aircraft are 6.5